

PATENT ABSTRACTS OF JAPAN

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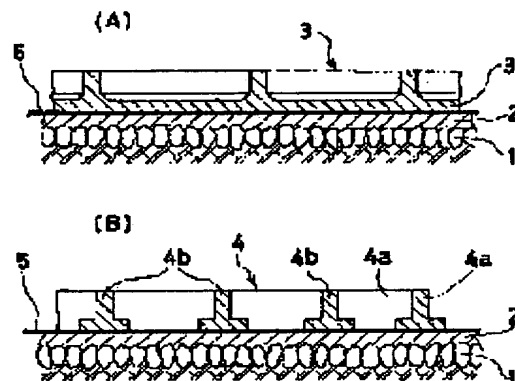
(21)Application number : 09-311841 (71)Applicant : HATTORI KIYOSHIGE
(22)Date of filing : 13.11.1997 (72)Inventor : HATTORI KIYOSHIGE

(54) VIBRATION-ISOLATION FOUNDATION DEVICE FOR HOUSE

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent a disaster such as collapse by protecting a detached house from the lateral quakes of a severe earthquake.

SOLUTION: Sliding layers 5 isolating foundations from a ground and sliding the foundations together with a building by inertia to the large lateral quakes of a large-scale earthquake are interposed among the ground and the foundations 3, 4 bearing the building.



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CLAIMS

[Claim(s)]

[Claim 1]A quake-absorbing basic device of a house making a slip layer which insulates the foundation from the ground and lets the foundation slide the whole building by inertia to a strong horizontal shake of an earthquake between the ground and the foundation supporting a building intervene.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]As for the small earthquake which the damage of this invention is also small and has little influence the building itself is influenced, a rabbit is also related with the quake-absorbing basic device of the house which is going to carry out quake-absorbing [of the single-family house] as an angle to the horizontal shake whose seismic intensity of an earthquake with a massive class beyond 5, 6, 7, or it (class) is strong.

[0002]

[Description of the Prior Art]Inside, to the upper-layers building, various kinds of earthquake-proof mechanisms and a base isolation mechanism are developed.

[0003]

[Problem(s) to be Solved by the Invention]However, the effective mechanism in which a building is protected from the strong horizontal shake of a massive earthquake by the grade which reinforces the mounting strength which attaches a foundation, a pillar and a pillar, and a beam via a diagonal brace if attached to a door-denominated building is not developed.

[0004]

[Means for Solving the Problem]This invention was developed in view of the above, insulated the foundation from the ground between the ground and the foundation supporting a building, and made a slip layer which lets the foundation slide the whole building by inertia to a strong horizontal shake of an earthquake intervene.

[0005]

[Embodiment of the Invention]An embodiment of the invention is described with reference to the example of a graphic display. in each example of a graphic display, the upper surface by the ***** earthwork which 1 provided in the ground, and the concrete and mortar which 2 placed on ***** earthwork is even -- it accustoms and a layer is shown. this ***** earthwork -- it accustoming and the shape of the flat surface of a layer, and area, In the case of the raft foundation 3 which has bottom 3' of one, the foundation of a building,

Rather than the periphery of the periphery foundation, in the case of the mat foundation 4 which uses at least somewhat larger similar figures than bottom 3' of a raft foundation, and consists of the band-like periphery foundation 4a and the band-like internal foundation 4b which it was provided in the inside which this periphery foundation surrounds, and was combined with the periphery foundation, it turns one at least, and it is made into big similar figures. Of course, shape and area may be size from it.

[0006]A larger area than the plane area of the foundation 3 and 4 and the **** hammer-hardening ***** earthwork 1 are constructed for a rate cobblestone on the ground, placing concrete and mortar on it, accustoming and considering it as the layer 2 -- this -- if it accustoms and a layer solidifies, the slip layer 5 will be formed on it, and it accustoms by this slip layer on the slip layer 5, it insulates with the layer 2, and the raft foundation 3 or the mat foundation 4 is built with concrete.

[0007]Drawing 1 shows the case where the existing waterproof vinyl chloride sheet is used as the slip layer 5. If it accustoms as a slip layer, it covers with a vinyl chloride sheet on a layer and the foundation 3 or 4 is built with concrete on it, the foundation is accustomed with a vinyl chloride sheet, it will be insulated from the layer 2, and it will be accustomed, and will not be combined with a layer. And since it accustoms and area of the layer 2 is made larger than the area of the foundation 3 and 4, When a foundation is fixed on the foundation and a building is built on it, even if the momentary big horizontal shake of the beginning of a massive earthquake attacks from which direction, the foundation accustoms a horizontal shake by inertia to a building, the slip layer 5, and one horizontally [the contrary] relatively, shifts and moves to them on the layer 2, and can prevent collapse. If there is a horizontal shake of a small earthquake, the foundation, a building, and a slip layer will align with a horizontal shake, and it will move, but a serious disaster is not produced.

[0008]Although the example of drawing 1 explained the case where the existing waterproof vinyl chloride sheet was used as the slip layer 5, Accustom, as shown in drawing 2, and it covers with granular material, such as a pebble, sand, a gravel, a glass ball, and a steel ball, in the shape of [about 50 mm thick] a layer on the layer 2, It may cover with the insulation sheets 7, such as a vinyl chloride sheet, a waterproof paper, an oil paper, and a felt sheet, on it, the slip layer 5 may be constituted from the layer 6 and the insulation sheet 7 of granular material, and the foundation 3 and 4 may be built on it. As a slip layer, styrene foam about 50-200 mm thick and the adiathermic board of urethane can also be used, and when such an adiathermic board is used, there is also adiabatic efficiency from an under floor.

[0009]When how the slip layer 5 is constituted has the how much large impulse force of the original rolling of a massive earthquake, it sets appropriately by whether the foundation 3 and 4 shifts horizontally relatively and it is made to move by inertia.

[0010]

[Effect of the Invention]Since accustom the ***** earthwork 1 which was provided in the ground and one according to this invention so that clearly, and on it above, the layer 2 is

insulated by the slip layer 5, the foundation 3 or 4 is built with concrete and a building is built on the foundation, If there are many momentary extreme horizontal shakes in early stages of a massive earthquake, the foundation will shift to the building on it, and one relatively to a direction with a reverse horizontal shake of an earthquake, and will move by inertia to them. Therefore, the disaster by collapse of the building itself, the indoor furniture in a building and the fall of furniture, and crash can be beforehand prevented by the strong horizontal impulse of a horizontal shake of a massive earthquake.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]The sectional view in which (A) shows the example of a raft foundation, and (B) are the sectional views showing the example of a mat foundation.

[Drawing 2]It is a sectional view of other examples of a slip layer.

[Description of Notations]

- 1 ***** earthwork
- 2 Concrete or mortar accustoms and it is a layer.
- 3 Raft foundation
- 4 Mat foundation
- 5 Slip layer

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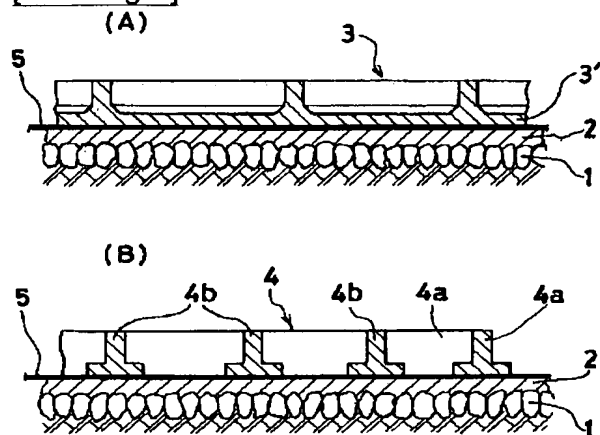
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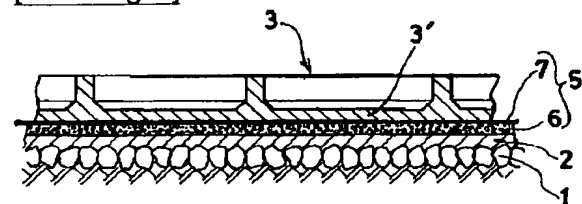
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DRAWINGS

[Drawing 1]



[Drawing 2]



[Translation done.]

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(71) 出願人 592216719

服部 清茂

三重県三重郡菰野町大字杉谷1572-10

(72) 発明者 服部 清茂

三重県三重郡菰野町大字杉谷1572-10

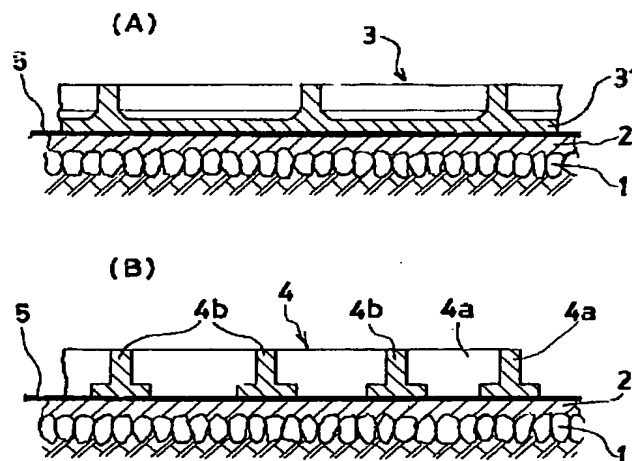
(74) 代理人 弁理士 福田 武通 (外2名)

(54) 【発明の名称】 家屋の免震基礎装置

(57) 【要約】

【課題】 戸建て住宅を、大きな地震の横ゆれから守り、倒壊等の災害を防止する。

【解決手段】 大地と、建物を支える基礎3、4との間に、基礎を大地から絶縁し、大型の地震の大きな横ゆれに対して慣性で建物ごと基礎を滑らせる滑り層5を介在させる。



【特許請求の範囲】

【請求項1】 大地と、建物を支える基礎との間に、基礎を大地から絶縁し、地震の強い横ゆれに対して慣性で建物ごと基礎を滑らせる滑り層を介在させたことを特徴とする家屋の免震基礎装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】この発明は、被害も小さく、建物自身も受ける影響が少ない小さな地震は兎も角として、震度が5、6、7、或いはそれ以上の級（クラス）の大型の地震の強い横ゆれに対して戸建て住宅を免震しようとする家屋の免震基礎装置に関する。

【0002】

【従来の技術】中、高層建造物に対しては各種の耐震機構、免震機構が開発されている。

【0003】

【発明が解決しようとする課題】しかしながら戸建ての建物に付いては土台と柱、柱と梁を筋交いを介して取付ける取付け強度を補強する程度で、建物を大型の地震の強い横ゆれから守る効果的な機構は開発されていない。

【0004】

【課題を解決するための手段】本発明は上記に鑑み開発されたもので、大地と、建物を支える基礎との間に、基礎を大地から絶縁し、地震の強い横ゆれに対して慣性で建物ごと基礎を滑らせる滑り層を介在させたことを特徴とする。

【0005】

【発明の実施の形態】本発明の実施の形態を図示の実施例を参照して説明する。図示の各実施例においては、1は大地に設けた割ぐり地業、2は割ぐり地業上に打設したコンクリートやモルタルによる上面が平らなならし層を示す。この割ぐり地業、ならし層の平面の形状、及び面積は、建物の基礎が一体の底面3'を有するべた基礎3の場合は、べた基礎の底面3'よりも少なくとも一回り大きい相似形にし、又、帯状の外周基礎4aと、この外周基礎が囲む内側に設けられて外周基礎と結合した帯状の内部基礎4bとからなる布基礎4の場合は外周基礎の外周よりも少なくとも一回り大きな相似形にする。勿論、形状、及び面積はそれより大であってもよい。

【0006】大地に割ぐり石を、基礎3、4の平面積より大きい面積、搗き固めて割ぐり地業1を施工し、その上にコンクリート、モルタルを打設してならし層2とし、このならし層が固まったらその上に滑り層5を設け、それから滑り層5の上に、該滑り層でならし層2と絶縁してべた基礎3、又は布基礎4をコンクリートで構築する。

【0007】図1は滑り層5として防水性のある塩ビシ

ートを用いた場合を示す。滑り層としてならし層の上に塩ビシートを敷き、その上に基礎3又は4をコンクリートで構築すると、基礎は塩ビシートでならし層2から絶縁され、ならし層とは結合しない。そして、ならし層2の面積は基礎3、4の面積より大きくしてあるので、基礎の上に土台を固定し、その上に建物を構築した場合、大型の地震の当初の瞬時の大きな横ゆれがどの方向から襲ってきても基礎は建物と滑り層5と一体に慣性で相対的に横ゆれとは反対の水平方向にならし層2の上でずれ動き、倒壊が防げる。尚、小さな地震の横ゆれがあると、基礎と建物と滑り層は横ゆれと同調して動くが、大きな災害は生じない。

【0008】滑り層5として防水性のある塩ビシートを用いた場合を図1の実施例で説明したが、図2に示すようにならし層2の上に小石、砂、砂利、ガラス玉、鋼球などの粒状物を例えば厚さ50mm程度の層状に敷きつめ、その上に塩ビシート、防水紙、油紙、フェルトシートなどの絶縁シート7を敷き、粒状物の層6と絶縁シート7で滑り層5を構成し、基礎3、4をその上に構築してもよい。又、滑り層としては厚さ50～200mm程度の発泡スチロールや、ウレタンの断熱性のボードを使用することもでき、このような断熱性のボードを使用すると床下からの断熱効果もある。

【0009】滑り層5をどのように構成するかは、大型地震の当初の横揺れの衝撃力がどの程度大きいときに基礎3、4が慣性で相対的に水平方向にずれ動くようにするかによって適切に定める。

【0010】

【発明の効果】以上で明らかなように、この発明によれば大地と一体に設けた割ぐり地業1、その上のならし層2とは滑り層5で絶縁して基礎3又は4をコンクリートで構築し、基礎上に建物を構築するので、大型地震の初期に多い瞬時の極端な横ゆれがあると、基礎はその上の建物と一体に慣性で地震の横ゆれとは逆の方向に相対的にずれ動く。従って、大型地震の横ゆれの強い水平衝撃によって建物自身の倒壊や、建物内の室内家具、調度類の転倒、崩落による災害を未然に防止できる。

【図面の簡単な説明】

【図1】(A)はべた基礎の実施例を示す断面図、

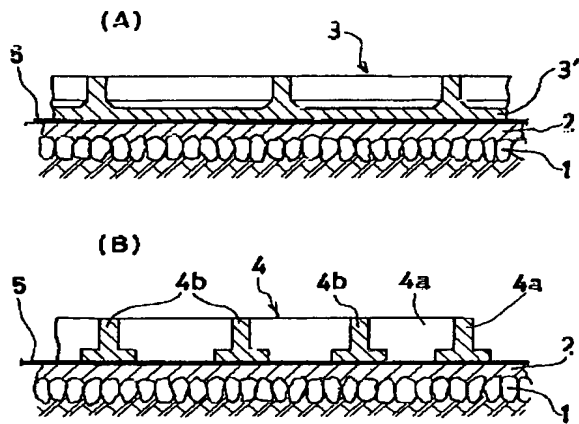
(B)は布基礎の実施例を示す断面図である。

【図2】滑り層の他の実施例の断面図である。

【符号の説明】

- 1 割ぐり地業
- 2 コンクリート又はモルタルのならし層
- 3 べた基礎
- 4 布基礎
- 5 滑り層

【図1】



【図2】

